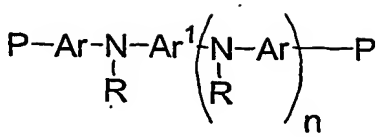
Claims

1) A monomer of formula (Im):



(Im)

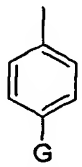
wherein each Ar is the same or different and independently represents an optionally substituted aryl or heteroaryl; Ar^1 represents an optionally substituted aryl or heteroaryl; each R is the same or different and independently represents a substitutent; each P is the same or different and independently represents a leaving group capable of participating in metal insertion with a nickel or palladium complex catalyst; and n is at least 2.

2) A monomer according to claim 1 wherein each P is the same or different and is independently selected from halogen; a reactive boronic group selected from a boronic acid group, a boronic ester group and a borane group; a group of formula $-B-Hal_3^- M^+$ or $DZ-B-Hal_3$ wherein each Hal independently represents a halogen, M represents a metal cation and DZ represents diazonium; a group of formula wherein each Hal independently represents a halogen and M represents a metal cation a group of formula $O-SiR^7_3$ wherein each R^7 independently represents an optionally substituted alkyl or aryl; or a moiety of formula $-O-SO_2-Z$ wherein Z is selected from the group consisting of optionally substituted alkyl and aryl.

3) A monomer according to claim 1 or 2 wherein n is 2 or 3.

4) A monomer according to claim 1, 2 or 3 wherein each R is an optionally substituted aryl or heteroaryl.

5) A monomer according to claim 4 wherein each R is a group of formula (II):



(II)

wherein G is hydrogen or a substitutent.

6) A monomer according to claim 5 wherein G is a substituent selected from C_{1-20} alkyl; C_{1-20} alkoxy; C_{1-20} fluoroalkyl; C_{1-20} perfluoroalkyl; and fluorine.

7) A process for preparing a polymer comprising the step of polymerising the monomer of formula (Im).

8) A process according to claim 7 wherein each P is independently a halogen or a moiety of formula $-O-SO_2-Z$ and the monomer of formula (Im) is polymerised in the presence of a nickel complex catalyst.

9) A process according to claim 7 wherein each P is independently a halogen or a moiety of formula $-O-SO_2-Z$, the monomer of formula (Im) is polymerised with a second monomer having at least two reactive boron functional groups independently selected from a boronic acid group, a boronic ester group and a borane group, and the polymerisation is performed in the presence of a palladium complex catalyst and a base.

10) A process according to claim 7 wherein each P is independently a reactive boron functional group selected from a boronic acid group, a boronic ester group and a borane group; the monomer of formula (Im) is polymerised with a second monomer having at least two substitutents independently selected from halogen or a moiety of formula $-O-SO_2-Z$; and the polymerisation is performed in the presence of a palladium complex catalyst and a base.

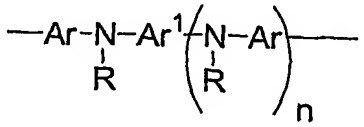
11) A process according to claim 7 wherein one P is a halogen or a moiety of formula $-O-SO_2-Z$ and the other P is a reactive boron functional group selected from a boronic acid group, a boronic ester group and a borane group, and the polymerisation is performed in the presence of a palladium complex catalyst and a base.

12) A process according to any one of claims 7-11 wherein the monomer of formula (Im) is polymerised with a second monomer selected from the group consisting of optionally substituted aryl and heteroaryl groups.

13) A process according to claim 12 wherein the second monomer is selected from the group consisting of optionally substituted phenyl, fluorene, spirobifluorene, indenofluorene and heteroaryl.

14) A polymer obtainable by the process of any one of claims 7-13.

15) A co-polymer comprising a first repeat unit of formula (Ir) and a second repeat unit Ar^2:



(Ir)

wherein each Ar is the same or different and independently represents an optionally substituted aryl or heteroaryl; Ar^1 represents an optionally substituted aryl or

heteroaryl; each R is the same or different and independently represents a substitutent; n is at least 2; and Ar^2 represents an optionally substituted aryl or heteroaryl that has a backbone consisting of aryl or heteroaryl groups and that is directly linked and conjugated to Ar of the first repeat unit of formula (Ir).

16) A co-polymer according to claim 15 wherein Ar^2 is selected from the group consisting of optionally substituted phenyl, fluorene, spirobifluorene, indenofluorene and heteroaryl.

17) An optical device comprising a first electrode for injection of charge carriers of a first type, a second electrode for injection of charge carriers of a second type and a polymer according to claim 14 located between the first and second electrodes.

18) A method of forming an optical device comprising:

- depositing from solution a polymer according to claim 14 onto a substrate carrying a first electrode for injection of charge carriers of a first type, and
- depositing over the polymer a second electrode for injection of charge carriers of a second type.

19) A switching device comprising a polymer according to claim 14.

20) A field effect transistor comprising, in sequence, a gate electrode; an insulator; a polymer according to claim 14; and a drain electrode and a source electrode on the polymer.

21) An integrated circuit comprising a field effect transistor according to claim 20.